mobileaccess

MobileAccessVE Dual-Band Instant Coverage Solution

Release Notes

VCU Version 2.6
VAP Version 2.6

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1 General

The MobileAccess**VE** Dual-Band solution provides enhanced, cost effective, in-building coverage for any enterprise environment. This Solution is quickly and easily deployed using the existing cable infrastructure to provide instant coverage without effecting existing LAN services or performance. MobileAccess**VE** minimizes disruption while providing a scalable and flexible solution at a significantly lower total installation cost.

This document contain important information about the MobileAccess**VE** Dual-Band Instant Coverage Solution. Please refer to the "MobileAccess**VE** Dual-Band User Manual" and "MobileAccess**VE** Dual-Band Quick Installation Sheet" for important information on both installation and operation.

List of Acronyms

Abbreviation	**Description**
DB	Dual-Band
PoE	Power Over Ethernet
SME	Small / Medium Enterprise
STP	Shielded Twisted Pair
UTP	Unshielded Twisted Pair
VAP	VE Access Pod
VCU	VE Control Unit
UMTS	Universal Mobile Telecommunications System
EGSM	Extended Global System for Mobile Communications
PCS	Personal Communications Service
DCS	Digital Cellular System

2 Released Components

2.1 Released HW Modules

VE Control Units (VCUs)

- VCU-EGSM-UMTS-12E - VE Control Unit for EGSM/UMTS bands, 12 ports
- VCU-DCS-UMTS-12E - VE Control Unit for DCS/UMTS bands, 12 ports
- VCU-CELL-PCS-12E - VE Control Unit for CELL/PCS bands, 12 ports

VE Access Pods (VAPs)

- VAP-EGSM-UMTSE - VE Access Pod for EGSM/UMTS bands
- VAP-CELL-PCSE - VE Access Pod for CELL/PCS bands
- VAP-DCS-UMTSE - VE Access Pod for DCS/UMTS bands

2.2 Released SW Components

VE Control Unit (VCU) SW

- Version 2.6 (for EGSM-UMTS VCU, DCS-UMTS VCU and CELL-PCS VCU)

VE Access Pod (VAP) SW

- Version 2.6 (for EGSM-UMTS VAP, DCS-UMTS VAP and CELL-PCS VAP)

3 Solution Highlights

The MobileAccess**VE** Dual-Band solution provides enhanced, cost effective, in-building wireless coverage. This solution is easily deployed using the existing cable infrastructure to provide instant coverage without effecting existing LAN services or performance. VE minimizes disruption while providing a scalable and flexible solution at a significantly lower total installation cost.

The MobileAccess**VE** solution consists of the following main components:

- **VE Control Unit (VCU)** - Interfaces with the RF sources and VAPs. It combines the wireless services and the Ethernet service, distributing them to VAPs over CAT-5e/6 cables. Each VCU can support up to 12 VAPs and coverage can be expanded by connecting up to 12 Slave VCUs. Each VCU can serve as either Master or Slave depending on its connections.
- **VE Access Pods (VAPs)** – Distribute wireless services and provides Ethernet/IP connectivity and PoE pass-through to connected IP appliances, such as Wi-Fi APs and IP Phones. VAPs are distributed at strategic locations, over one or more floors, and plug into RJ-45 jacks, which are connected to the VCU via exiting CAT-5e/6 infrastructure. VAPs are remotely powered by the VCU utilizing PoE, eliminating the need for local powering.

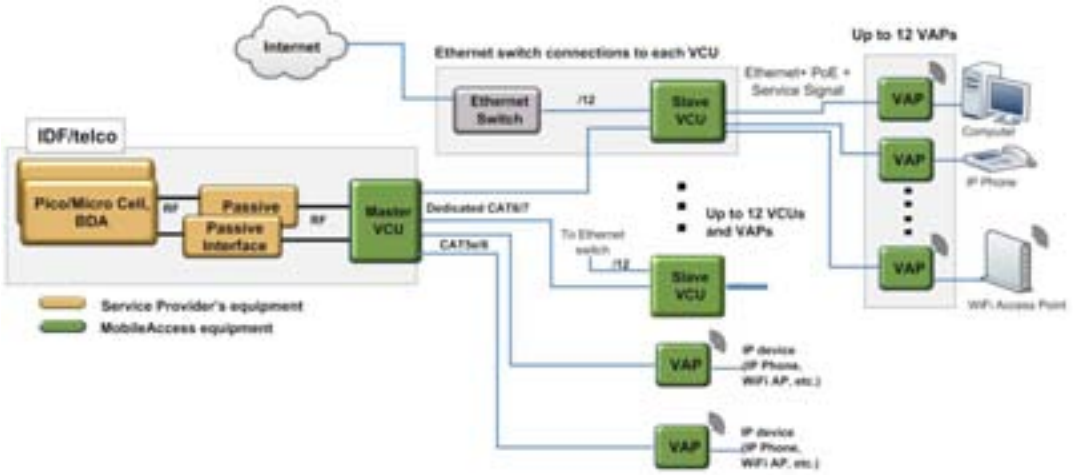
The MobileAccess**VE** solution provides the following main features and benefits:

- **Low Deployment Cost** – The MobileAccess**VE** system can be deployed over existing CAT-5e/6 cabling infrastructure and existing Ethernet jacks. The VE system seamlessly coexists with the Enterprise LAN and does not consume LAN capacity. VAPs are remotely powered using Power-over-Ethernet (PoE) eliminating the need for local powering.
- **Simple and Fast Installation** - The system is simple to install, and can be deployed in a few hours, with minimum disturbance to the enterprise. VAPs are provided with integrated internal antennas. (External antennas can also be used for special coverage requirements).
- **Auto Configuration of Slave VCUs and VAPs** - The Master VCU auto-discovers the Slave VCUs and VAPs, performs cable adjustment to each unit individually, and configures it to provide required service. This process is done automatically without user intervention.
- **Flexible Selection of Capacity Source –** BTS, Picocells, Femtocells and BDAs.
- **Minimum Macro-network Impact** - With low power distributed coverage.
- **Flexible and Scalable Architecture -** Ease of expansion provides "pay as you grow" scalability. The system can be deployed in a single-tier configuration (Master VCU and up to 12 VAPs) and easily expanded to a multi-tier configuration by adding Slave VCUs and additional VAPs. The Master VCU has the same HW and SW as the Slave VCU and they are auto-configured to act as either Master or Slave according to the actual cabling connections.
- **Carrier-Grade Management** - Remote monitoring and configuration using a standard web browser and SNMP. The Master VCU provides a central interface for managing the entire deployment, including Slave VCUs and VAPs. The VE system can seamlessly integrate into Fault Management system that supports SNMP events. The VCU provides output alarms that can be connected to the auxiliary input of the Base Station or other dry-contact application.
- **Kentrox's Extend PDM** - The VE deployment can be monitored using Kentrox's Extend Polled Device Monitoring (PDM) system for in-building system monitoring.
- **Remote SW Download -** VCUs and VAPs can be upgraded remotely via the web GUI, eliminating truck rolls when SW update is desired. Simply download the SW images to the VCU and distribute from VCU to connected VAPs.

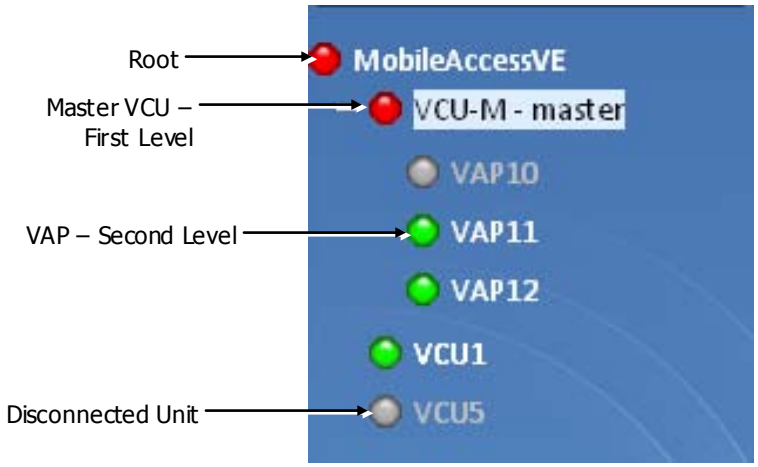
4 Version Highlights

Version 2.6 introduces the following main features:

- **Support for "Mixed Mode" deployment** – VAPs can now be connected directly to the master VCU in multi-tier configuration (together with Slave VCUs), allowing to provide coverage on the floor where the master VCU is installed (or on adjacent floors) directly from the master without requiring an additional slave VCU. This is illustrated in the following figure:



- **Enhanced management with "Baseline" feature** – The VE Web Access Application includes a Baseline feature providing an indication on network elements (VCUs/VAPs), which were disconnected from the VE network. Connected VCUs and VAPs are automatically added to the Baseline upon detection, and will appear in the topology as grayed out in case they are disconnected. Disconnected unit can be manually removed from the baseline, so that it no longer appears in the network topology, via the web GUI.



- **IP recovery tool** – An external windows application allowing to recover (display and change) the IP parameters of the VCU by connecting to the RS-232 port of the VCU.

5 Important Notes

This section highlights important functional considerations and behavioral aspects of the MobileAccess**VE** system:

	Note	Description
1.	VCU IP Address and Subnet Mask	VCU is preconfigured with default IP address: 192.168.1.1 / Default mask: 255.255.255.0. It is advised to assign the VCU a routable IP address to facilitate remote management using standard web browser and SNMP. No validity check is implemented in this release on subnet mask – take care to only use legal subnet masks. DHCP configuration is not supported in this release.
2.	Upgrading the SW to version 2.6	When upgrading the SW to version 2.6, first upgrade all VAPs and only after VAPs are upgraded upgrade the VCUs. [Please refer also to note 16 below].
3.	Connecting VAPs and Slave VCUs to the Same Master VCU	Connecting both VAPs and VCUs to the same VCU is supported in this version. All units (VCUs and VAPs) must use version 2.6 or above for this configuration.
4.	Maximum Expected Pin	The Maximum Expected Pin is set as default to +33dBm. Set The Maximum Expected Pin according to maximum expected power level from your capacity source (BTS/BDA). **WARNING**: DO NOT apply to VCU RF inputs power levels exceeding the configured Maximum Expected Pin by more than 15dB.
5.	Data Displayed in Web GUI Screens	Depending on the size of the deployment, it may take 5-30 seconds for the web GUI screen to update after changing parameters. The change itself takes effect immediately.
6.	VCU HW Reset Button	VCU HW reset button is not active in this release.
7.	Maximum Number of VAPs	When the total number of VAPs in the deployment exceeds 72, consult with MobileAccess support.
8.	Cables between VCU and Ethernet Switch	The cables connecting the VCU to the Ethernet switch should not be longer than 5m.
9.	Cable between VAP and Ethernet Appliance	The cable connecting the VAP to the Ethernet appliance should not be longer than 5m.
10.	Web GUI of Slave VCU	When locally connecting to a specific Slave VCU, only the VAPs connected to this VCU can be monitored. To monitor the entire deployment, connect to the GUI of the Master VCU.
11.	Web GUI of Slave VCU	When locally connecting to a specific Slave VCU, alarm status of the VCU may be displayed incorrectly. Connect to Master VCU to monitor system status.
12.	SNMP Configuration Screen in Web GUI	In rare occasions, buttons of SNMP configuration screen in the web GUI are not displayed. In such cases, please refresh the screen.
13.	VCU LED Indications in GUI	The LED indications presented in the GUI (on the VCU picture) are not fully operational. Use icon color in the topology tree as an alternative for a quick view of system alarm status.
14.	Location Level Index in SNMP	vcuLocationLevelIndex and vapLocationLevelIndex are from 1-13, where 1 relates to the unit itself and 2-13 relates to ports 1-12 in the VCU.
15.	SW Download	When performing a remote SW download to the VCU, locate the SW image files on the local hard drive of the PC. Downloads from a network path are not supported in this release.
16.	SW Download	In installations with Slave VCUs, a session should be opened to the IP address of the Slave VCU in order to upgrade the SW of the Slave VCU and associated VAPs.

	Note	Description
17.	SW Distribution to VAPs	During the SW distribution process from VCU to VAPs, service may be interrupted. It is advised to perform the SW download and distribution in a maintenance window scheduled at off-peak hours. The SW distribution process takes 3-5 minutes.
18.	SW Distribution to VAPs	During the distribution process DO NOT perform configuration changes or connect/disconnect VAPs.
19.	SW Distribution to VAPs	It is required to reset the VAPs to complete the distribution process, and/or after swapping between VAP SW images. The VCU and all VAPs will restart automatically to complete the distribution/swap process.
20.	Adjustment Alarm	An Adjustment Alarm is raised when a VAP or Slave VCU is connected over a cable exceeding system cable length limitation. The system continues to provide wireless services, but you should check VAP coverage (as output power may be degraded due to excess cable loss) and Ethernet connection (as Ethernet standard maximum cable length is probably exceeded). (This alarm is not applicable in the Master VCU).
21.	Cable Performance	The VE system is designed to operate with full performance over typical CAT-5e cables up to 100m length. As there may be a significant variance in cable actual performance, an Adjustment Alarm may also be triggered when connecting on a cable shorter than 100m, indicating that this cable has excess loss that may be degrading system output power.
22.	Coexistence with LAN Using PoE	In the current release only "alternative A" PoE is supported. Support for "alternative B" PoE is planned as a future enhancement. If this is required consult MobileAccess.
23.	External Antenna Option	By default, the VAP is set to transmit through the integrated internal antennas. To use external antennas, select the "External Antenna" option for the VAP in the GUI.
24.	Monitor, Setup and Help Screens	Monitor, Setup, and Help screens are not implemented in this release.
25.	Events and Syslog Screens	Events and Syslog screens are not implemented in this release.

6 Infrastructure Requirements

Ethernet standards specify that the maximum distance between an Ethernet switch and appliance (computer, WLAN AP, etc.) should not exceed 100m (300ft). Therefore, when VE shares the IT LAN, the maximum distance for a given cable run cannot be longer than 100 m (300ft) between the Ethernet switch and appliance. This includes all patch cords (from switch to VCU, from VCU to patch panel, from RJ-45 outlet to VAP, and from VAP to appliance).

Typically the horizontal cabling system will be connected to patch-panels in the communication rooms. The entire cabling system, including the patch panels and patch cords should adhere to the CAT-5e/6 standard. Specifically all pairs of the CAT-5e cable should be wired in the patch panels and patch cords.

Infrastructure Requirements:

1. IDF/Telco closet space for one or more VCUs depending on the number and locations of the installed VCUs: (48.3cm x 51.3cm x 8.88cm) per VCU.

   Note: When planning the IDF/Telco shaft, take the RF equipment (picocell/microcell or BDA) and the VCU in to consideration.

2. 350 Watts of AC power to the VCU IDF/Telco closet.
3. Building infrastructure:
   - CAT-5e/6 cabling, Unshielded or Shielded Twisted Pair (UTP/STP). 24 AWG minimum diameter for CAT-5e cabling.
   - Dedicated CAT-6/7 STP cable from Master VCU to Slave VCUs with run lengths NOT exceeding 100m (300ft) and no shorter than 10m.
   - CAT-5e/6 UTP or STP cable from VCU to each VAP with run lengths NOT exceeding 100m (300ft) and no shorter than 10m (33ft). VAPs can be connected over existing CAT-5e/6 cabling infrastructure and existing Ethernet jacks without affecting the LAN.

   Note: Verify with the IT department that the existing cables support the VE installation. If infrastructure documentation is available, review it to determine cable types and lengths. If the cable information is not available, attempt to visually identify the cable type (depending on the cable vendor, the cable type may be listed on the cable sheath). It is recommended to use a Fluke cable tester to measure the cable length of the most remote VAPs.

7 Coverage Guidelines

The maximal coverage area of each VAP is affected by the density and type of environment to be covered. This section provides information on coverage criteria in various types of environments:

- **Standard Environment**: A traditional office environment with offices, hallways, and scattered cubicles.
- **Open Environment**: Environment with minimum of obstacles (i.e. walls). This type of space can be a large conference or meeting room, cubical areas, lobby, or atrium.
- **Dense Environment**: A dense environment consists of a relatively large amount of walls, offices, equipment, tall file cabinets, bookshelves, and other items that could potentially impact the wireless signal. Examples for this type of environment are dense offices, hospitals, and manufacturing spaces.

Coverage guidelines herein are conservative "rule of thumb" estimates of RF coverage per VAP, meant to be used in scenarios in which detailed designs are not performed. When the coverage layout is designed, the coverage per VAP is expected to increase by up to 33%. Coverage estimates in this section assume 25% overlap between the coverage areas of neighboring VAPs to ensure robust, full coverage throughout the enterprise with no "dead zones".

	Band	**PCS**	**PCS**	**UMTS**
	Technology	**CDMA or GSM**	**WCDMA**	**WCDMA**
	Downlink Frequency	**1900 MHz**	**1900 MHz**	**2100 MHz**
Dense Environment	**Spacing between VAPs**	128 feet (39 m)	120 feet (36 m)	90 feet (27.5 m)
	Coverage per VAP	12,750 sqft (1,185 sqm)	11,250 sqft (1,045 sqm)	6,300 sqft (585 sqm)
Open Environment	**Spacing between VAPs**	90 feet (27.5 m)	83 feet (25 m)	67 feet (20.5 m)
	Coverage per VAP	25,425 sqft (2,362 sqm)	21,350 sqft (1,983 sqm)	14,250 sqft (1,324 sqm)
Standard Environment	**Spacing between VAPs**	67 feet (20.5 m)	64 feet (19.5 m)	57.5 feet (17.5 m)
	Coverage per VAP	14,250 sqft (1,324 sqm)	12,750 sqft (1,185 sqm)	10,425 sqft (969 sqm)

In areas with combinations of environments of various densities, place the VAPs on the border between the different types of areas, closer to the denser area.

The coverage guidelines in the table above are provided for the *higher* frequency bands (UMTS and PCS). The lower frequency bands (DCS, EGSM and CELL) are omitted from the table because coverage in these bands will be better than that of the higher frequency bands. The coverage of a dual-band system will be determined by the higher frequency band (i.e. PCS for CELL/PCS and UMTS for EGSM/UMTS and DCS/UMTS).

8 Kentrox's Extend PDM System for In-building System Monitoring

This release introduces the support for monitoring the MobileAccess**VE** deployment using Kentrox's Extend Polled Device Monitoring (PDM) system for in-building system monitoring. This solution utilizes the SNMP protocol to monitor alarms, including polling alarms on the MobileAccess**VE** devices.

The following are prerequisites for integration with Kentrox's PDM solution:

- Kentrox Extend PDM system with software license for monitoring "type-B" systems.
- Kentrox Extend PDM software version 3.40 or newer.
- Extend PDM Device Definition File, generated by Kentrox.
- VCU version 2.4 or newer.
- IP connectivity between the VE Master VCU and the Kentrox server (e.g. via a wireless modem).

Please consult MobileAccess or Kentrox for necessary hardware or software components and support:

Kentrox

Joel Tamkin – Product Manager
Joel_tamkin@kentrox.com
+1 (614) 923-1242

Tech Support
support@kentrox.com
+1 (800) 733-5511

MobileAccess

Tech Support
Techsupport@mobileaccess.com
+1 (800) 787-1266

MobileAccess
8391 Old Courthouse Road, Suite 300, Vienna, VA 22182
Tel: +1(866)436-9266, +1(703)848-0200 TAC: +1(800)787-1266, Fax: +1(703)848-0280
http://www.MobileAccess.com

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